

Application No. 10/710,260
Technology Center 2884
Amendment dated September 22, 2006
Reply to Office Action dated May 22, 2006

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Amendments to the Specification:¹

Please replace paragraph [000³2] with the following amended paragraph: 

Infrared (IR) sensors have been used to measure the temperature of thermal sources, such as hot materials, humans, etc. To accurately detect heat radiated from a target, interference from ambient light, particularly visible light, should be filtered out. This can be done by adding a filter in front of the IR sensor. For example, in commonly-assigned U.S. Patent No. 6,844,606 ~~Application Serial No. 10/065,446~~ to Logsdon et al., a chip formed of silicon - which allows only wavelengths longer than about 1.1 μ m ~~1.1 ϕ m~~ to pass through - is individually mounted to a chip carrier on which an infrared sensor is mounted so that the silicon chip is between the sensor and the target being sensed. In the automotive applications, an IR sensor package equipped with such a silicon "window" allows a targeted subject, such as the driver or passengers of a car, to be monitored with minimum background interferences.

¹ All references to pages and paragraphs in Applicant's electronically-filed application are those inserted by the USPTO authoring software.

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Please replace paragraph [001¹¹6] with the following amended paragraph: *LL*

The present invention provides an optical sensor package that employs a silicon-containing substrate as the supporting material for an IR sensor, which is preferably made by standard integrated circuit (IC) fabrication processes. A preferred sensor employs a thermopile as the IR sensor, such as the thermopiles disclosed in commonly-assigned U.S. Patent Nos. 6,793,389 and 6,828,172, ~~Application Serial Nos. 10/065,447 and 10/065,448~~, the contents of which relating to thermopile construction are incorporated herein by reference. In addition, a suitable thermocouple structure for the thermopile is disclosed in commonly-assigned U.S. Patent Application Publication No. 2005/0016576 ~~Serial No. {Attorney Docket No. DP-300915}~~ to Jiang et al., the contents of which relating to thermocouple construction are incorporated herein by reference.

Please replace paragraph [001¹⁵4] with the following amended paragraph: *LL*

In view of the package configuration shown in Figure 1, use of the sensor package 10 involves facing the backside of the silicon

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substrate 12 toward the intended target, such as the driver or passengers of a vehicle, so that infrared radiation passes through the silicon wall 24 of the substrate 12 to the sensing elements of the sensor 18 on the membrane 16. In this manner, visible light with wavelengths shorter than about 1.1 μm ~~1.1 μm~~ is filtered out by the silicon wall 24 before reaching the sensor 18.

Please replace paragraph [0015] with the following amended paragraph: *LS.*

Figure 2 shows an IR sensor package 40 similar to that of Figure 1 (with the same reference numbers used to identify essentially the same features), but with a filter material 42 implanted and driven-in or epitaxially grown on the backside of the substrate 12 to provide a filtering layer. Depending on the filter material 42, different wavelengths of light can be filtered. Candidate materials include germanium (Ge), PbS, InAs, and PbTe, which allow only wavelengths longer than about 1.88, 3.02, 3.44 and 4.0 μm , ~~4.0 μm~~ , respectively, to pass through the window 24 to the sensor 18.